



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

PHILOSOPHICAL
TRANSACTIONS,
OF THE
ROYAL SOCIETY
OF
LONDON.

FOR THE YEAR MDCCCXX.

PART I.

LONDON,

PRINTED BY W. BULMER AND W. NICOL, CLEVELAND ROW, ST. JAMES'S;
AND SOLD BY G. AND W. NICOL, FALL-MALL, BOOKSELLERS TO HIS MAJESTY,
AND PRINTERS TO THE ROYAL SOCIETY

MDCCCXX.

ADVERTISEMENT.

THE Committee appointed by the *Royal Society* to direct the publication of the *Philosophical Transactions*, take this opportunity to acquaint the Public, that it fully appears, as well from the council-books and journals of the Society, as from repeated declarations which have been made in several former *Transactions*, that the printing of them was always, from time to time, the single act of the respective Secretaries, till the Forty-seventh Volume: the Society, as a Body, never interesting themselves any further in their publication, than by occasionally recommending the revival of them to some of their Secretaries, when, from the particular circumstances of their affairs, the *Transactions* had happened for any length of time to be intermitted. And this seems principally to have been done with a view to satisfy the Public, that their usual meetings were then continued, for the improvement of knowledge, and benefit of mankind, the great ends of their first institution by the Royal Charters, and which they have ever since steadily pursued.

But the Society being of late years greatly enlarged, and their communications more numerous, it was thought advisable that a Committee of their members should be appointed, to reconsider the papers read before them, and select out of them such as they should judge most proper for publication in the future *Transactions*; which was accordingly done upon the 26th of March, 1752. And the grounds of their choice are, and will continue to

be, the importance and singularity of the subjects, or the advantageous manner of treating them; without pretending to answer for the certainty of the facts, or propriety of the reasonings, contained in the several papers so published, which must still rest on the credit or judgment of their respective authors.

It is likewise necessary on this occasion to remark, that it is an established rule of the Society, to which they will always adhere, never to give their opinion, as a Body, upon any subject, either of Nature or Art, that comes before them. And therefore the thanks, which are frequently proposed from the Chair, to be given to the authors of such papers as are read at their accustomed meetings, or to the persons through whose hands they received them, are to be considered in no other light than as a matter of civility, in return for the respect shewn to the Society by those communications. The like also is to be said with regard to the several projects, inventions, and curiosities of various kinds, which are often exhibited to the Society; the authors whereof, or those who exhibit them, frequently take the liberty to report, and even to certify in the public news-papers, that they have met with the highest applause and approbation. And therefore it is hoped, that no regard will hereafter be paid to such reports and public notices; which in some instances have been too lightly credited, to the dishonour of the Society.

CONTENTS.

I. *The Croonian Lecture. A farther investigation of the component parts of the Blood.* By Sir EVERARD HOME, Bart.
V. P. R. S. p. 1

II. *The Bakerian Lecture. On the composition and analysis of the inflammable gaseous compounds resulting from the destructive distillation of coal and oil, with some remarks on their relative heating and illuminating powers.* By WILLIAM THOMAS BRANDE, Esq. Sec. R. S. Prof. Chem. R. I. p. 11

III. *On the Elasticity of the Lungs.* By JAMES CARSON, M. D.
Communicated by THOMAS YOUNG, M. D. For. Sec. R. S. p. 29

IV. *On the action of crystallized bodies on homogeneous light, and on the causes of the deviation from NEWTON's scale in the tints which many of them develope on exposure to a polarised ray.* By J. F. W. HERSCHEL, Esq. F. R. S. Lond. and Edin. p. 45

V. *A case of the human foetus found in the ovarium, of the size it usually acquires at the end of the fourth month.* By A. B. GRANVILLE, M. D. F. R. S. In a letter addressed to Sir EVERARD HOME, Bart., V. P. R. S. p. 101

VI. *On some combinations of Platinum.* By EDMUND DAVY, Esq. Professor of Chemistry, and Secretary to the Cork Institution. Communicated by F. BABINGTON, M. D. F. R. S. p. 108

CONTENTS.

VII. *On the methods of cutting rock crystal for micrometers.* By
WILLIAM HYDE WOLLASTON, M. D. F. R. S. p. 126

APPENDIX.

Meteorological Journal Kept at the Apartments of the Royal Society, by Order of the President and Council.

PHILOSOPHICAL
TRANSACTIONS,
OF THE
ROYAL SOCIETY
OF
LONDON.

FOR THE YEAR MDCCCXX.

PART II.

LONDON,

PRINTED BY W. BULMER AND W. NICOL, CLEVELAND ROW, ST. JAMES'S;
AND SOLD BY G. AND W. NICOL, PALL-MALL, BOOKSELLERS TO HIS MAJESTY,
AND PRINTERS TO THE ROYAL SOCIETY.

MDCCCXX.

CONTENTS.

VIII. *On a new principle of constructing ships in the mercantile navy.* By Sir ROBERT SEPPINGS, F. R. S. p. 133

IX. *On the milk tusks, and organ of hearing of the Dugong.* By Sir EVERARD HOME, Bart. V. P. R. S. 144

X. *Upon the different qualities of the alburnum of spring and winter-felled oak trees.* By THOMAS ANDREW KNIGHT, Esq. F. R. S. 156

XI. *On the mode of formation of the canal for containing the spinal marrow, and on the form of the fins (if they deserve that name) of the Proteosaurus.* By Sir EVERARD HOME, Bart. V. P. R. S. 159

XII. *Some experiments on the fungi which constitute the colouring matter of the red snow discovered in Baffin's Bay.* By FRANCIS BAUER, Esq. F. L. S. In a Letter addressed to the Right Honourable Sir JOSEPH BANKS, Bart. G.C.B. P.R.S. 165

XIII. *Some account of the Dugong.* By Sir THOMAS STAMFORD RAFFLES, Governor of Sumatra; communicated in a Letter to Sir EVERARD HOME, Bart. V. P. R. S. 174

XIV. *Observations on the Human Urethra, showing its internal structure, as it appeared in the Microscope of F. BAUER, Esq.* By Sir EVERARD HOME, Bart. V. P. R. S. 183

XV. *On the Errors in Longitude as determined by Chronometers at Sea, arising from the action of the iron in the ships upon the Chronometers.* By GEORGE FISHER, Esq. Communicated by JOHN BARROW, Esq. F. R. S. 196

CONTENTS.

XVI. <i>An account of a new mode of performing the High Operation for the Stone. By Sir EVERARD HOME, Bart. V. P. R. S.</i>	p. 209
XVII. <i>A Sketch of an Analysis and Notation applicable to the estimation of the value of Life Contingencies. By BENJAMIN GOMPERTZ, Esq. F. R. S.</i>	214
XVIII. <i>On the measurement of Snowdon, by the Thermometrical Barometer. By the Rev. F. J. H. WOLLASTON, B.D. F.R.S.</i>	295
XIX. <i>On Sounds inaudible by certain ears. By WILLIAM HYDE WOLLASTON, M. D. P. R. S.</i>	306
XX. <i>Particulars respecting the anatomy of the Dugong, intended as a Supplement to Sir T. S. RAFFLES' Account of that animal. By Sir EVERARD HOME, Bart. F. R. S.</i>	315
XXI. <i>On the compressibility of Water. By JACOB PERKINS, Esq. Communicated by the late Right Hon. Sir JOSEPH BANKS, Bart. G. C. B. P. R. S.</i>	324
XXII. <i>Astronomical Observations. By STEPHEN GROOMBRIDGE, Esq. F. R. S.</i>	330
<i>Presents received by the Royal Society, from November, 1819, to July, 1820.</i>	333
<i>Index.</i>	345